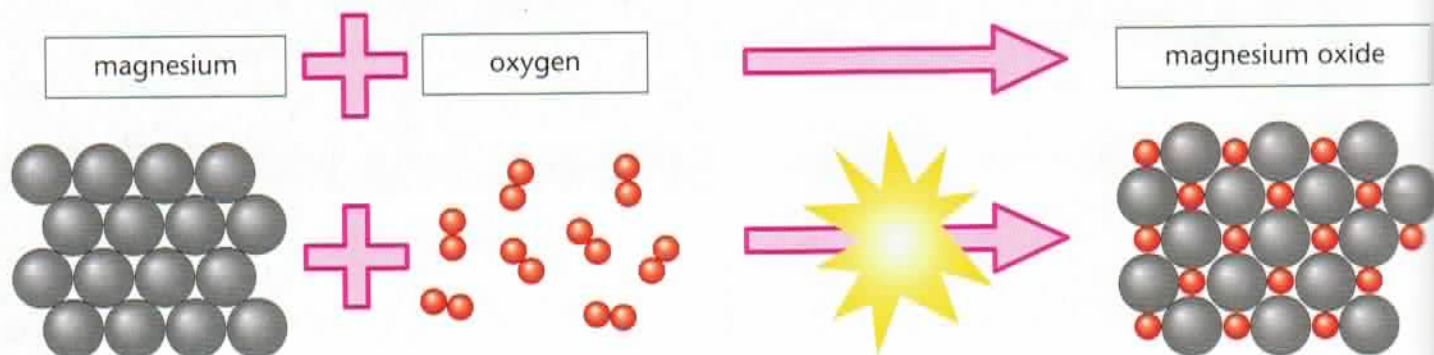
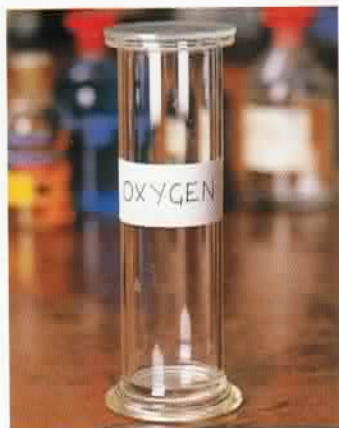


Burning elements

Kay's class is burning elements. When you burn something it reacts with oxygen in the air. The teacher burns magnesium and it reacts with oxygen. She asks the class to look for evidence that a chemical reaction is happening.

- a** Do you think a chemical reaction has taken place? Give reasons for your answer.



New substances

When magnesium burns in oxygen an oxide is made. It is a new substance called magnesium oxide. Magnesium oxide is not an element. It is made up of more than one type of atom. It is a **compound**. Elements react together to make compounds. Oxides are one type of compound.

- b** What compound will form when oxygen reacts with:
(i) calcium? (ii) silver?

Look at the diagram above showing the particles in magnesium oxide. Each magnesium atom is surrounded by oxygen atoms. Each oxygen atom is surrounded by magnesium atoms. This is because the magnesium atoms and the oxygen atoms were joined together during the chemical reaction.

Every compound has a formula

It would take too long to draw particle diagrams every time we want to show the atoms in compounds. We can use the symbols to represent the atoms. We write **MgO** to represent magnesium oxide.

MgO is the **formula** for magnesium oxide. It tells us that magnesium oxide is a compound, not an element, and that it contains magnesium atoms and oxygen atoms.

c Which of these substances are compounds?

Na CaO H₂O CO₂ O₂ Au Ag

Predicting how elements react

We have already seen that when elements burn in oxygen, they react to make oxides. Elements that react with sulphur all react in a similar way to make sulphides.

Hydrogen reacts with sulphur to make hydrogen sulphide. The hydrogen and sulphur atoms react and join together. Hydrogen sulphide is a compound.

hydrogen + sulphur → hydrogen sulphide



d Magnesium and sulphur react in a similar way.
Write the word equation for the reaction.

You have seen that oxides all have oxygen in them, and sulphides all have sulphur in them. There are other names with similar patterns to help us know what elements are present in compounds. Some examples are shown in the table.

Compound contains	Compound name
oxygen	oxide
sulphur	sulphide
chlorine	chloride
bromine	bromide
fluorine	fluoride

e Predict the products of the reactions of magnesium with each of these elements and write the word equation for each reaction.

(i) chlorine (ii) bromine (iii) fluorine.

Questions

- a** Which two elements would you react together to make:
(i) copper oxide **(ii)** calcium chloride **(iii)** iron bromide?
b Write word equations to show the three reactions in **a**.
- Predict the products of these reactions and write a word equation for each:

 - zinc and oxygen
 - potassium and chlorine
 - iron and fluorine
 - sodium and sulphur.
- Name these compounds:
a FeO **b** CuF₂ **c** Ag₂S **d** MgCl₂ **e** AlBr₃
- Sulphur reacts with oxygen to make two different compounds, sulphur dioxide and sulphur trioxide.

 - Which of these formulae is sulphur trioxide?

SO₂ SO₃
 - Which of the two compounds will be made when there is lots of oxygen present? Give reasons for your answer.

Did you know?

The pictures of atoms on these pages are 25 million times bigger than the real atoms.

For your notes:

- Elements react together to make **compounds**.
- A compound is a substance with more than one type of atom joined together.
- A compound is represented by a **formula** that shows the ratio of the different atoms in the compound.